CARDIOPULMONARY EMERGENCY HOSPITAL VISITS WERE ASSOCIATED WITH NO_2, PM_{10} AND H_2S LEVELS IN ICELAND'S CAPITAL AREA DURING 2006-2010

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Background and Aims: Air quality in Iceland's capital region is generally good, but following the spring 2010 volcanic eruption of Eyjafjallajökull natural particle matter (PM) storms reaching Reykjavik have increased in severity. Another pollution concern is hydrogen sulfide (H_2S) emitted from geothermal harnessing plants located east of Reykjavik. The aim of this time series study was to analyse the association between daily air pollution levels and emergency room (ER) visit rates and determine if volcanic dust modified that association.

Methods: The daily number of all ER visits to Landspítali University Hospital for the period 1st of January 2003 to 31st December 2010 for cardiovascular, pulmonary and cerebrovascular diseases in adults (≥18 years old) was extracted from the patients file register. Pollution and weather data were provided by local authorities. Regression analysis was performed with a multipollutant generalized additive model (GAM) using Poisson distribution. Individual lags were included for each pollutant for same day (lag0), lag1 and lag2. Results were adjusted for traffic pollutants nitrogen dioxide (NO_2) and ozone (O_3), influenza epidemics, weather variables and time trends.

Results: During the study period, there were 17700 ER visits (53% males), median number of ER visits per day was 5 (Quartile (Q)1-Q3: 3-8). The most common diagnosis category was Cardiac (53%), followed by Pulmonary (31%) and Stroke (17%). A positive association was found between ER visit rates and NO_2 levels on the same day, RR 1.04 (95% CI 1.01 1.07) per 10 $\mu g/m^3$ increase; and PM_{10} and H_2S levels two days before, RR 1.01 (95% CI 1.00 1.02) and RR 1.04 (95% CI 1.01 1.07) per 10 $\mu g/m^3$ respectively.

Conclusion: In this preliminary analysis, significant associations between ER visits for cardiovascular, pulmonary, cerebrovascular diagnoses and NO_2, PM_{10} and H_2S levels were found. Immediately, no effect modification was seen during the Eyjafjallajökull volcanic eruption.